(iii) [detecting] measuring a property of the [labeled] mixture of diverse unbound polymers as an indicator of the efficiency of the synthesizing step.

2. (Amended) The method of claim [1] 39, wherein each of the labeled polymers comprises a single isomer.

3. (Amended) The method of claim [1] 39, wherein the labeled unbound polymers are heterogeneous by size, and wherein the method further comprises separating the labeled unbound polymers by size.

4. (Amended) The method of claim [1] 39, wherein the labeled unbound polymers are heterogeneous by size, and wherein the method further comprises separating the labeled unbound polymers by charge using ion exchange chromatography.

5. (Amended) The method of claim [1] 39, wherein the labeled unbound polymers are heterogeneous by size, and wherein the method further comprises separating the labeled unbound polymers by size using capillary gel electrophoresis.

6. The method of claim 4, wherein the ion exchange chromatography is performed by HPLC.

7. The method of claim 4, wherein the ion exchange chromatography is performed by HPLC, and wherein the labeled unbound polymers are detected as they exit an ion exchange column.

8. The method of claim 1, wherein the polymer is an oligonucleotide.

10. (Amended) A method for measuring the effect of altering a polymer array synthesis protocol, comprising:

(i) [providing] synthesizing an array of diverse polymers occupying different regions on a planar surface

[synthesized] on a solid support by a first synthesis protocol, thereby creating a reference array of polymers;

(ii) [providing] synthesizing an array of diverse polymers occupying different regions on a planar surface on a planar surface on a solid support synthesized by a second synthesis protocol, wherein the second synthesis protocol is different than the first synthesis protocol, thereby creating a test array of polymers;

B2 cont'd

(iii) cleaving separately the reference array of polymers and the test array of polymers, thereby creating a mixture of diverse cleaved [reference] polymers from the reference array and a mixture of diverse cleaved [test] polymers from the test array;

(iv) [detecting] measuring a property of the mixture of diverse cleaved [test] polymers from the test array as an indicator of the efficiency of the first synthesis procedure and measuring a property of [and] the mixture of diverse cleaved [reference] polymers from the reference array as an indicator of the efficiency of the second synthesis procedure, thereby determining whether a difference between the first and second synthesis procedures affects the efficiency of the second synthesis procedure[; and,

(v) comparing the cleaved test polymers to the cleaved reference polymers].

11. The method of claim 10, wherein the test and reference polymers are oligonucleotides.

12. The method of claim 10, wherein the first synthesis protocol differs from the second synthesis protocol by a single variation.

13. The method of claim 10, wherein the reference polymers and the test polymers are attached to the solid substrate by a cleavable linker.

14. The method of claim 10, wherein the test and reference polymers comprise a detectable label.

15. The ~~method~~ of claim 14, wherein the label is a single isomer.

37. (Amended) The method of claim [1] 39, wherein the labeled polymers comprise a label comprising a fluorescent moiety.

38. The method of claim 14, wherein the detectable label comprises a fluorescent moiety.

Please add the following claim:

39. The method of ~~claim 1, wherein~~ each of the polymers further comprises a label other than a monomer unit of the polymers.

REMARKS

The presently claimed invention is directed to methods of assessing the efficiency of a synthesis procedure for generating an array of diverse spatially addressable polymers on a planar surface of a substrate. The diverse polymers are synthesized so as to be attached to the substrate through cleavable linkers. At least some of the polymers on a substrate are then cleaved from the support to produce a mixture of diverse polymers in solution. A property of the mixture of polymers is then determined as a measure of the efficiency of the synthetic procedure by which the array of immobilized polymers was produced. For example, an HPLC profile of the mixture of polymers can indicate the degree of completeness and uniformity of synthesis of the various different polymers in the mixture being analyzed. Although the probes tested in the assay are effectively destroyed for further use, the assay provides a useful indicator of the quality of other probe arrays synthesized by the same process.

Claim 1 has been amended for greater clarity in accordance with the above comments. Support is provided at e.g., p. 16,